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ABSTRACT

General and specialized terms developed in data communications in recent years are listed alphabetically and defined. The list is said to be more representative than exhaustive and is intended for use as a reference source. Approximately 140 terms are included. (Author/SK)

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DATE: February 28, 1972

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TITLE: A DATA COMMUNICATIONS GLOSSARY OF TERMS

AUTHOR: Frank Teplitzky

ABSTRACT

In recent years a large lexicon of general and specialized terms has been generated in Data Communications. This glossary, which is representative rather than exhaustive, is intended as a reference source.

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A DATA COMMUNICATIONS GLOSSARY

Acoustic Coupler

A device for audibly coupling a data terminal to a standard telephone handset.

Alphanumeric

A combination of alphabetic and numeric characters.

Amplitude Modulation (AM)

The process by which a continuous high frequency wave is caused to vary in amplitude by the action of other modulating frequency waves.

Analog Signals

Signals which can assume an almost infinite number of values during any specified time. Examples are the human voice or AC sine waves.

AND Gate

A circuit with multiple inputs that will function only when signals are present at all inputs.

ASCII

American Standard Code for Information Interchange. This is the code established as an American standard by the American Standards Association.

ASR

Automatic Send-Receive. A teletypewriter equipped with a paper tape reader and a paper tape punch.

Asynchronous

Random start-stop data. Requires special start/stop information (normally 1 start and 1 or 2 stop bits/data word) in each character. Example: Teletypewriter or 2741 Terminal.

Attenuation

A general term used to denote a decrease in magnitude in transmission from one point to another.

Audio

Frequencies which can be heard by the human ear (usually between 15 cycles and 20,000 Hertz).

Bandwidth

The difference, expressed in Hertz or cycles per second, between the highest and lowest frequencies of a band.

Baseband

In the process of modulation, the baseband is the frequency band occupied by the total of the transmitted signals when first used to modulate a carrier.

Batch Processing

A method of processing in which a number of similar input items are accumulated away from the computer and submitted as a batch for efficient processing.

Baud

A unit of signaling speed. In an equal length code, one baud corresponds to a rate of one signal element (bit) per second. Where the bits are not equal in length, the baud value will vary somewhat.

Baudot Code

A code for the transmission of data in which five bits represent one character. Named after Emile Baudot, a pioneer in printing telegraphy. The name is usually applied to the code used in many teleprinter systems.

Binary Digit

A numeral in the binary scale of notation. This digit may be a "one" (1) or a "zero" (0). It may be equivalent to an "on" or "off" condition, a "yes" or "no", etc.

Bit

A unit of information content. Contraction of "binary digit", a bit is the smallest unit of information in a binary system of notation. It is the choice between two possible states, usually designated one and zero.

Bit Rate

The speed at which bits are transmitted, usually expressed in bits per second.

Block

A group of computer records, words or storage locations which is treated as a physical unit. For example, a block on magnetic tape may contain several logical records combined into one block for greater efficiency in information transfer.

Block Diagram

A diagram of a system, instrument, computer or program in which selected portions are represented by boxes (blocks) and interconnecting lines.

Broad Band

See Wideband Channel.

Buffer

A storage device used to compensate for a difference in rate of flow of data or time of occurrence of events, when transmitting data from one device to another.

Buffered Network

A real time, store and forward message switching network with digital computers at the switching points which act as buffers for the characters, words, blocks or files in the system.

Carriage Return

In a character-by-character printing mechanism, the operation that causes the next character to be printed at the left margin.

Carrier System (Frequency Division Multiplexing)

A means of obtaining a number of channels over a single path by modulating each channel upon a different "carrier" frequency and demodulating at the receiving point to restore the signals to their original form.

Carrier System (Time Division Multiplexing)

A means of obtaining a number of channels over a single path by time-dividing the path into a number of time slots and assigning each channel its own repeated time space. At the receiving end, each time-separated channel is reassembled. The system is ideally suited for the transmission of digital data.

Cathode Ray Tube (CRT)

A television-like picture tube used in visual display terminals.

Central Processing Unit (CPU)

The CPU is the heart of the computer, consisting of circuitry to control input and output units and auxiliary attachments. In addition, it interprets and executes the computer program. The CPU contains memory (storage) devices which can hold computer programs and data (typical CPU memory devices are magnetic cores).

Channelize

Grouping narrow band channels into one wideband channel.

Character

The actual or coded representation of a digit, letter or special symbol.

Circuit Switching

The temporary direct electrical connection of two or more channels between two or more points in order to provide the user with exclusive use of an open channel with which to exchange information. (Also called Line Switching.)

Code

A system of symbols or conditions which represent information.

Code Conversion

The conversion of data from one code to another.

Communications Common Carrier

A company which dedicates its facilities to a public offering of universal communication services, and which is subject to public utility regulation.

Computer Utility

A service which provides computational ability for a variety of applications and uses (analogous to services offered by a water and power company).

Control Character

A non-alphanumeric, non-printing character, generally used to signify the beginning or end of a process to be executed, or other special purpose.

Conversation Mode (Interactive Mode)

A procedure with communication between a terminal and the computer in which each entry from the terminal elicits a response from the computer and vice versa.

Cross Talk

Unwanted insertion of signal from an adjacent communication channel.

CTS (Clear to Send)

A control signal from the modem to the terminal indicating that the modem is ready to transmit data.

Data

Any representations, such as digital characters or analog quantities, to which meaning might be assigned.

Data Collection

The act of bringing data from one or more points to a central point.

Data Communications

Broadly, the movement of encoded information by means of electrical transmission systems. More specifically, the transfer of data between points of origin and reception including all manual and machine operations necessary to transfer such data. Data communications may include such operations as data originating, receipt, signal conversion, transmission, recording, storing, retrieving, forwarding, switching and delivery of the data.

Data Concentrator

A device (generally, a mini-computer) which matches a larger number of input channels with a fewer number of output channels.

Dataphone

A trade mark of the AT&T Company to identify the data sets manufactured and supplied by the Bell System for use in the transmission of data over the regular telephone network. It is also a service mark of the Bell System which identifies the transmission of data over the regular telephone network (Dataphone Service).

Data Processing

Data Processing involves the use of the computer for operations which include the functions of storing, retrieving, sorting, merging and calculating data, according to programmed instructions.

Data Set

A device which converts the signals of a business machine to signals that are suitable for transmission over communication lines. It may also perform other related functions.

Demodulation

The process of retrieving an original signal from a modulated carrier wave. This technique is used in data sets to make communication signals compatible with business machine signals.

Dial-Up

The use of a dial or push-button telephone to initiate a station-to-station telephone call.

Digital Computer

Any device which handles information in the form of discrete numbers such as an adding machine. Its meaning, however, is usually restricted to high-speed electronic computers which are digital, rather than analog.

Digital Signals

Signals which can only assume certain discrete values. For example, in a system which contains binary digital signals, only "0" and "1" (that is, the presence or absence of a pulse), can exist during a specified time period.

Direct Distance Dialing

A telephone service which enables a user to dial directly telephones outside the user's local area without the aid of an operator.

Display Unit

A device which provides a visual representation of data.

Duplex

In communications, pertaining to a simultaneous two-way and independent transmission in both directions (sometimes referred to as "full duplex"). Contrast with Half-Duplex.

EOM

A control character used to signify the end of a stream of data within a transmitted message.

Error

Any discrepancy between a computed, observed, or measured quantity and the true, specified, or theoretically correct value or condition.

Error Control

An arrangement that will detect the presence of errors. In some systems, refinements are added that will correct the detected errors, either by operations on the received data or by retransmission from the source.

Exchange

A defined area, served by a communications common carrier, within which the carrier furnishes service at the exchange rate and under the regulations applicable in that area as prescribed in the carrier's filed tariffs.

Facsimile (FAX)

Transmission of pictures, maps, diagrams, etc. The image is scanned at the transmitter, reconstructed at the receiving station and duplicated on some form of paper or film.

File

A collection of related records treated as a unit. Thus, in inventory control, one line of an invoice forms an item, a complete invoice forms a record, and the complete set of such records forms a file.

Flip-Flop

A type of circuit that is used to store one bit of information.

Foreign Exchange Service (FX)

A service that connects a customer's telephone to a remote exchange. This service provides the equivalent of local service from the distant exchange.

Full Duplex

See Duplex.

Half-Duplex

Pertaining to an alternate, one-way-at-a-time, independent transmission (sometimes referred to as "single"). Contrast with Duplex.

Hard Copy

A printed copy of machine output in readable form for human beings (for example, reports, listings, documents, summaries).

Hertz (Hz)

The frequency of a waveform (formerly cycles per second).

Holding Time

The length of time a communication channel is in use for each transmission. Includes both message time and operating time.

Information

The meaning assigned to data by known conventions.

Information Retrieval

That branch of computer technology concerned with techniques for storing and searching large quantities of information and making selected information available. An information retrieval system may or may not be a real-time system (see Real-Time).

Input

1. The data to be processed.
2. The state or sequence of states occurring on a specified input channel.
3. The device or collective set of devices used for bringing data into another device.
4. A channel for impressing a state on a device or logic element.
5. The process of transferring data from an external storage to an internal storage.

Interface

A shared boundary. (Example, the boundary between two subsystems or two devices.)

Kilohertz (kHz)

1000 X frequency of waveform.

Line Switching

Thw switching technique of temporarily connecting two lines together so that the stations directly exchange information.

Local Channel

A loop or local distribution plant. A channel connecting a communications user to a central office.

MICR

Magnetic Ink Character Recognition. Machine recognition of characters printed with magnetic ink. Contrast with OCR.

Message

A communication, prepared for information interchange, in a form suitable for passage through the interchange medium. It includes: (a) all portions of the communication such as machine sensible controls, (b) an indication of the start of the message and the end of the message, and (c) a heading containing routing and other information, one or more texts containing the originator-to-addressee communication(s), and the end-of-text indicator.

Message Format

Rules for the placement of such portions of a message as message heading, address, text and end of message.

Message Numbering

The identifications of each message within a communications system by the assignment of a sequential number.

Message Retrieval

The capability to retrieve a message some time after it has entered an information system.

Message Switching

The switching technique of receiving a message, storing it until the proper outgoing circuit and station are available, and then retransmitting it toward its destination. The content of the message remains unaltered.

Microwave

All electromagnetic waves in the radio frequency spectrum above 890 megahertz.

Mnemonic ("Memory Aiding") Address

A simple address code that has some easily remembered relationship to the name of the destination, e.g., LA for Los Angeles, ATL for Atlanta. Pronounced Nee-monic.

Modem

Contraction of modulator-demodulator. A device which modulates and demodulates signals transmitted over communication facilities.

Modulation

The process by which some characteristic of one wave is varied in accordance with another wave. This technique is used in data sets to make business-machine signals compatible with communication facilities.

Multiple Address Message

A message to be delivered to more than one destination.

Multiplexing

The division of a transmission facility into two or more channels.

Multipoint Circuit

A circuit interconnecting several stations.

Network

1. A series of points interconnected by communications channels.
2. The switched telephone network is the network of telephone lines normally used for dialed telephone calls
3. A private network is a network of communications channels confined to the use of one customer.

Noise

An undesired disturbance in a communication system. Noise can generate errors or spurious messages. Contrast with Signal.

OCR

Optical Character Recognition. The machine recognition of printed or written characters based on inputs from photoelectric transducers. Contrast with MICR.

Off-Line

Pertaining to equipment or devices not under direct control of the central processing unit. May also be used to describe terminal equipment which is not connected to a transmission line.

On-Line

Pertaining to peripheral equipment or devices in direct communication with the central processing unit. May also be used to describe terminal equipment which is connected to a transmission line.

One-Way Channel

A channel which permits transmission in one direction only.

Operating Time

The time required for dialing the call, waiting for the connection to be established, and coordinating the forthcoming transaction with the personnel or equipment at the receiving end.

OR Gate

A circuit with multiple inputs that will function when a signal is present at any input.

Output

1. Data that has been processed.
2. The state or sequence of states occurring on a specified output channel.
3. The device or collective set of devices used for taking data out of a device.
4. A channel for expressing a state of a device or logic element.
5. The process of transferring data from an internal storage to an external storage device.

Parallel Transmission

Method of information transfer in which all bits of a character are sent simultaneously. Contrast with Serial Transmission.

Perforator

A device for punching paper tape.

Print-Out

See Hard Copy.

Polling

A centrally controlled method of calling a number of points to permit them to transmit information.

Priority or Precedence

Controlled transmission of messages in order of their designated importance; e.g., urgent or routine.

Private Line or Private Wire

A channel or circuit furnished a subscriber for his exclusive use.

Punched Paper Tape

A strip of paper on which characters are represented by combinations of punched holes.

Real-Time

1. Pertaining to the actual time during which a physical process takes place.
2. Pertaining to the performance of a computation during a period short in comparison with the actual time that the related physical process takes place in order that results of the computations can be used in guiding the physical process.

Redundancy

The portion of the total information contained in a message which can be eliminated without loss of essential information.

Reperforator

A device that automatically punches a paper tape from received signals.

Response Time

The amount of time elapsed between generation of an inquiry at a data communications terminal and receipt of a response at that same terminal. Response time, thus defined includes:

Transmission time to the computer,
Processing time at the computer, including access time to obtain any file records needed to answer the inquiry, and
Transmission time back to the terminal.

Selective Calling

The ability of a transmitting station to specify which of several stations on the same line is to receive a message.

Serial Transmission

A method of information transfer in which the bits composing a character are sent sequentially. Contrast with Parallel Transmission.

Service Bureau

An installation where the user can purchase processing time on a central processor and peripheral equipment. The user supplies the programs and the center will load both program and data to be processed, process the data and deliver the results to the user. The program and data for processing may be delivered or sent between user and center in any of several forms: cards, punched tape, magnetic tape, etc. Data communications may be used between the user and the center to move the information electrically. The service bureau may also provide such services as keypunching the data and preparing it for processing (also see Computer Utility).

Signal

An intentional disturbance in a communication system. Contrast with Noise.

Signal to Noise Ratio

The ratio, expressed in decibels, of the usable signal to the noise signal present.

Simplex Channel

See One-Way Channel.

Single-Address Message

A message to be delivered to only one destination.

SOM

A specific character used to denote the beginning of a sequence of data words within a transmitted message.

Station

One of the input or output points on a communications system.

Status Reports

A term used to describe the automatic reports generated by a message-switching system generally covering service conditions such as circuits and stations out of service and back in service.

Storage

A general term for any device capable of retaining information.

Store-and-Forward

Process of message handling used in a message-switching system. The message is stored, then forwarded to the recipient.

Stunt-Box

A device to control the nonprinting functions of a teleprinter terminal. Control characters can be sent to it over the communications channel.

Sync Code

A specific character in synchronous data transmissions used to activate the receiving circuitry at the receiving station.

Tariff

The published rate for a specific unit of equipment, facility or type of service provided by a communications common carrier.

Teleprinter

The equipment used in a printing telegraph system. A teletypewriter.

Teleprinter Exchange Service

A service provided by communication common carriers to interconnect teleprinters. Similar to regular telephone service, customers dial calls from station-to-station but communicate using teleprinter equipment rather than telephones. Examples are TWX and Telex.

Tele-processing

A form of information handling in which a data processing system utilizes communications facilities.

Telpak

A service offered by communications common carriers for the leasing of wideband channels between two or more points.

Terminal

1. A point at which information can enter or leave a communication network.
2. An input/output device designed to receive or send source data in an environment associated with the job to be performed and capable of transmitting entries to and obtaining output from the system of which it is a part.

Text

That part of the message which contains the substantive information to be conveyed. Sometimes called "body" of the message.

Throughput

The actual amount of useful and non-redundant information which is transmitted or processed.

Tie Line

A private line communication channel of the type provided by communication common carriers for linking two or more points together.

Time-Sharing

A method of operation in which a computer facility is shared by several users for different purposes at (apparently) the same time. Although the computer actually services each user in sequence, the high speed of the computer makes it appear that the users are all handled simultaneously.

USASCII

The United States of America Standard Code for Information Interchange. This is the code established as an American standard by the American Standards Association.

Voice Grade Channel

A channel suitable for transmission of speech, digital or analog data, or facsimile, generally with a frequency range of about 300 to 3000 Hertz.

Volatile Display

The non-permanent image appearing on the screen of a visual display terminal.

Wide Area Telephone Service (WATS)

A service provided by Telephone Companies which permits a customer the use of an access line to make calls to telephones in a specific zone on a dial basis for a flat monthly charge.

Wideband Channel

A channel wider in bandwidth than a voice grade channel.

Word

1. In telegraphy, six characters (five characters plus one space).

2. In computing, an ordered set of characters that is the normal unit in which information may be stored, transmitted, or operated upon within a computer.